DOCUMENT RESUME

ED 137 331 TM 006 131

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TITLE	Generality and Correlates of Egocentrism in Children. Final Report.
SPONS AGENCY	National Inst. of Child Health and Human Development (NIH), Bethesda, Md.
PUB DATE	Sep 76
GRANT	HD-07369
NOTE	42p.
EDRS PRICE	MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS	Age Differences; *Children; *Correlation; *Egocentrism; Elementary Education; Factor Analysis; Intelligence Tests; Predictive Validity; Sex Differences; Social Behavior; Socioeconomic Status; Task Performance; Test Reliability; *Tests; Test Validity; *Validity
IDENTIFIERS	Piagetian Theory

ABSTRACT

This study seeks evidence for the validity of the concept of egocentrism in children. Three standard egocentrism tests are intercorrelated to determine the degree to which they appear to be measuring a single construct (convergent validity); whether the three tasks intercorrelate more than they do with a theoretically unrelated task (discriminant validity); whether test performance relates to social status variables of peer-nominated leadership and popularity (concurrent validity); and the relation between egocentrism and a theoretically necessary attentional skill, decentration. Performance is evaluated in relation to socioeconomic status, sex, and age (ages 6 through 9) to determine the level and variability in egocentric functioning of children in combinations of these variables. (Author/MV)

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GENERALITY AND CORRELATES OF EGOCENTRISM IN CHILDREN

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SPETEMBER, 1976

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NATIONAL INSTITUTE OF EDUCATION

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FINAL REPORT, NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT, (GRANT HD-07369).

Generality and Correlates of Egocentrism in Children

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Egocentrism has proved to be an attractive theoretical construct during the last decade to describe and explain a wide variety of immature social reasoning and social behavior in children. Since Piaget (1926) documented the young child's proclivity for attributing to other people his/her own understanding and perspectives, the concept has been used to partially explain immature moral judgements (Kohlberg 1969), difficulty in playing games with opposing roles (e.g., DeVries 1970), inadequate sharing and helping (Staub 1971), aggressive behavior (Feshbach & Feshbach 1969), and various forms of childhood psychopathology (e.g., Chandler 1973; Thompson Note 9).

The construct has been sufficiently plausible and useful, apparently, that very little research has been directed at the construct itself. However, during the past five years occasional questions have been raised about the measurement and generality of egocentrism (e.g., Flavell 1968; Rubin 1973; Shantz 1975). It is the aim of this study to intensively examine the construct validity (Campbell & Fiske 1959) of egocentrism by providing data to answer the following questions: (1) Is egocentrism a generalized inability to take another's role?; (2) Is egocentrism significantly related to the inability to decenter attention as Piaget's theory holds?; (3) Do measures of egocentrism relate more highly to each other than to intelligence?; (4) Is egocentric functioning related to peer popularity and leadership?; (5) And, to what extent does the level of egocentrism vary with socio-economic status, sex, and age? As such, this study seeks to assess the convergent, discriminant and predictive validity of the construct, egocentrism.

Egocentric functioning has been measured by a variety of techniques, sometimes referred to by the content of the problem as in "spatial egocentrism" or "communicative egocentrism." Most tasks have the common format of presenting a clear difference between another person's experience or information and the child's to determine whether the child is capable of recognizing the difference and capable of constructing the other's experience. For example, a child located at one site facing a group of objects has a spatial perspective of them that is different from another person at another site facing the same objects. Or, another example is the child having some information that another is not proviledged to and the task assesses the child's recognition of that fact and his ability to determine the other's thoughts. The various tasks, then, are considered egocentrism tasks in that they assess the child's self-other differentiation, but vary in the content of the differentiation.

Do children who perform poorly on one type of egocentrism task also tend to perform poorly on other types? This is a question of the generality of egocentrism, the first question with which this study deals. The assumption is made in much of the research literature that egocentrism is a general, pervasive tendency of young children to assume a high degree of similarity between themselves and others in viewpoint, thoughts, feelings, knowledge and opinions. Piaget assumed such generality because of his findings that this type of attribution error substantially decreased among children around eight years of age, although egocentrism was assessed in different groups of children by different tasks. In the past decade, studies have been done in which performance of a group of children on two or more tests of egocentrism have been correlated. The results have been mixed (Shantz 1975). In brief, no significant relations between various egocentrism tasks have been reported by Finley, French and Cowan (Note 3), Rothbaum (Note 6), Cooper and Flavell (1971), and Sullivan and Hunt (1967). Some studies have found no relations for part of a sample of

children, but significant relations for other parts (e.g., Ceresnie 1974; Kingsley Note 5). Significant positive relations among two or more tasks have been reported, however, by Cowan (Note 2), Rubin (1973), Van Lieshout, Leckie and Smits-Van Sonsbeek (Note 9), and Wolfe (1963). One of the most extensive studies was that by Rubin (1973) in which children were given four egocentrism tasks. Three of them--spatial perspectives, communicative egocentrism, and recursive thinking--intercorrelated in the .67 to .73 range for the entire sample from kindergarten to sixth grade, and .31 to .36 when age was partialled out. A factor analysis indicated a principal factor accounting for 57% of the variance on which the three role-taking measures loaded. Hollos and Cowan (1973) gave a battery of logical and egocentrism measures to Norwegian children, age 6½ to 9, and found a logical factor and a separate factor entirely defined by egocentrism tasks. Hollos (1975) replicated this study with Hungarian children, age 7 to 9, and again found two factors. The first factor was composed of logical tasks. The second factor was made up of egocentrism tasks, especially communicative role-taking and a pronouns test with loadings of .69 and .57, respectively. However, spatial perspective-taking and social role-taking had rather low loadings on this second factor (.27 and .30, respectively). Hollos suggested that the difference in loadings might indicate that egocentrism has two separable components which she interpreted as "verbal" versus "concretely presented" egocentrism (1975, p. 644).

The issue of the generality of egocentrism (or, conversely, role-taking ability) is far from settled. At best, there appears to be most often only a moderate relation among various tasks, particularly where relations are examined within a fairly restricted age range or age is partialled out. The lack of relationship or very low correlations found in some studies could be due to a variety of factors such as the reliability of the tasks, range of scores,

difficulty level, etc., all of which result for statistical reasons in low correlations. On the other hand, high correlations could result largely from shared method variance, such as measuring role-taking in all cases by highly verbal tasks. This does not appear to account for the higher relations found by Rubin (1973), however, since the content of the measures of spatial egocentrism, communication and recursive thinking differ quite markedly, as well as the type of response required. One purpose of this study is to examine further the issue of generality by determining the intercorrelations among three widely-used egocentrism tasks both across and within age levels.

Another method of establishing the construct validity of egocentrism is to demonstrate a high degree of relationship with an ability predicted in Piaget's theory (1967) to be necessary for egocentrism to decline--decentration. It is defined as an ability to shift or decenter from one aspect of a situation to other aspects. It is thought to emerge as conceptual thought gains ascendancy over sensory and perceptual processes and as such is fundamental to knowledge in all its forms, "a necessary condition of objectivity itself" (Piaget, 1970, p. 710). Unfortunately, the relation between decentration and role-taking has not been put to empirical test, apparently. Instead, role-taking and decentration have tended to be used as almost synonymous concepts rather than as two processes, attentional and logical, whose relationship is to be determined. To date there appears to be no independent testing of decentration ability, but rather, role-taking tasks are merely labeled "decentration" tasks (e.g., Gottman, Gonso, & Rasmussen 1975), or an extracted factor composed of role-taking tasks is labeled "decentration" (e.g., Rubin 1973), or decentration has been inferred from the same data as role-taking (e.g., Feffer 1959).

In the present study, an attempt has been made to measure decentration independently of role-taking. Two types of tasks were used which appear to

require an individual to go beyond habitual responses to objects or their perceptual/sensory aspects, to shift attention to other aspects. Specifically, one task requires a person to think of as many uses as possible for a common object, i.e., to shift attention from familiar uses and familiar qualities of the object to other aspects. A second task asked individuals to determine as many similarities among a group of objects as possible, the notion being that many similarities required shifting attention away from highly salient qualities to less obvious qualities. A high degree of relationship between performance on these two tasks would support some unity to the decentration notion, and a relation between them and egocentrism tasks would support the construct validity of egocentrism.

As a construct, egocentrism should be capable of definition in terms of "what it is not." Perhaps the most likely factor to be related to egocentrism is general intelligence, and a demonstration of its low correlation with egocentrism would provide support for the discriminant validity of egocentrism.

The predictive validity of egocentrism could be afforded by demonstrating its relationship to theoretically related social behavior. Piaget's position is that egocentrism has profound influence on the child's social interactions, and he has specifically proposed (1926) that a child's social status or popularity is related to being able to take another's viewpoint. The relation between egocentrism and popularity has been studied with mixed results, some indicating no relation (Finley et al Note 3; Rothenberg 1970) and some indicating a positive relation such as Rubin (1972), Gottman et al's (1975) reanalysis of Rubin's data (1973). Gottman et al (1975) found only communicative role-taking related to popularity, and not spatial role-taking. Rothenberg (1970) found that peer-nominated leadership related to sensitivity to others' feelings, rather than popularity. In short, it is worthwhile to further examine the relation between

egocentrism and social status variables to determine the degree to which they are related.

Until very recently, practically all information about social cognitive development has been restricted to middle socio-economic level children. There have been some indirect data suggesting less role-taking ability in lower socio-economic children and/or adults (Flavell 1968; Hess & Shipman 1965; Smilansky 1968), particularly in communicative role-taking tasks in which the speaker and listener differ a good deal in their information, vocabularies, etc. Gottman et al (1975) recently found consistently lower performance of low-socioeconomic status children on tasks for identifying emotions in others, spatial perspective-taking, communicative role-taking, and understanding of relational terms. In order to determine whether there are reliable differences in performance on egocentrism tasks, this factor will be analyzed in the present study.

Finally, grades 1 through 4 were selected for study which, according to Piagetian and related research, should afford a cross-sectional view of egocentrism during a period of relatively rapid change from predominately egocentric functioning to fairly stable ability to take the role of the other person in simple situations. Finally, another possible correlate of egocentrism will be evaluated, the sex of the child. To date the bulk of studies on egocentrism, with a few exceptions (e.g., Coie & Dorval 1973; Kurdek & Rodgon 1975), have revealed no consistent, significant differences between boys and girls in egocentric functioning.

Method

Subjects

Eighty children were tested, 44 of who were boys and 36, girls. They were

drawn randomly from Grades 1 through 4 with mean ages of 7.0, 7.7, 8.7, and 9.8, respectively. The average IQs for these grades, in order, were 103, 108, 110, and 114. Half the sample was drawn from a school serving a predominately middle socio-economic status (SES) neighborhood in which the median income of families in 1970 was $14,274 and the median value of owner-occupied homes was $24,000, according to the 1970 U.S. Census. The second school served a low SES neighborhood in which the median income was $9,395 and owner-occupied homes had a median value of $10,132. A prior survey by Rubin (1968) indicated similar income differences for the preceding five years, and indicated in addition that the middle SES area had a third of heads-of-household who were high school graduates and 22% were college graduates, whereas the low SES area had 46% with less than eight years of education and 3% were college graduates.

Tests and Procedures

Each child was individually administered three egocentrism tasks, two decentration tasks and the Peabody Picture Vocabulary Test in two sessions, each lasting approximately 20 minutes with a maximum of four days between sessions. A standard order of administration was the communication egocentrism task and spatial egocentrism task in the first session, followed in the second session by social role-taking, decentration, the Peabody Test, and peer nominations.

Spatial egocentrism task (SpE). This task assesses the child's ability to infer another's visual perspective of a group of objects when located at a site different than the child's. A miniature gas station building, two pumps and an Esso sign were presented on an 8½-inch diameter posterboard for the standard scene. Four replicas of this scene served as choices, each oriented differently to the child: 0 (same orientation as the standard), 90°, 180°, and 270°. A fifth choice was offered in which the same objects were rearranged on the base

and, thus, was an impossible perspective of the standard scene. A toy doll was located in random order at the four positions around the landscape and the child judged the doll's perspective. The test gas station scene was preceded by an identical task with a single object, a toy fire truck to insure that the child understood the task. The child's selections among the five choices of the gas station scene when the doll was at 90°, 180°, and 270° were weighted for degree of egocentricity. Zero was given for an incorrect choice that was egocentric (i.e., selecting the choice which showed the child's view at 0°); 1 was given for selecting the impossible perspective since it indicated the child recognized the doll would see something different than the child; 2 was given for all other incorrect choices, all of which had correct inter-object relations; and 3 was given for correct selection. Total scores for the three sites ranged from 0 to 9 but because the distribution of scores was almost bi-modal, pass/fail scoring was adopted to more faithfully represent performance. A score of 1 indicated failure (total scores of 0 to 2) and 2 indicated passing (total scores of 3 to 9).

Communicative egocentrism task (CE). This situation is designed to test the child's ability to take account of a listener's need for information (Cowan 1967). The child is required to tell the experimenter where on a six-square checkerboard s/he is placing objects so the listener can duplicate the child's behavior while unable to see what the child is doing. A set of six small objects are presented (a brown gorilla, green gorilla, brown moose, green moose, small green pig, and a larger green pig) and the child is shown that the experimenter has an identical set. Identical checkerboards were given to the child and experimenter that had red and white squares on the top row and blue and white on the bottom row. The child was told to select any toy and place it anywhere on the board, but to be sure to tell the experimenter which object

s/he selected and which square it was placed on so that the experimenter could do the same thing while the experimenter's back was turned. Only on the first object placement was the child reminded that the experimenter could not see what s/he was doing so the child must tell everything about the object and site. An example of an egocentric message on this type of task is, "I'm picking this up and putting it here." The score was the sum of the criterial attributes of objects selected and sites for the first four objects. The scores ranged from 8 to 17 adjectives.

Social egocentrism task (SocE). This task assesses the child's ability to infer what another person does not know (Flavell, 1968, p, 70-81). The child tells a story to seven cartoon pictures, some pictures are removed, and the child tells a second story that another person would tell who had only seen the shorter set. Performance is a measure of the child's ability to refrain from attributing to another person information that he alone is aware of and to infer what story another would tell.

Two sets of cartoons were used that illustrated simple stories. Set 1 showed a boy walking down a street, then looking fearful as he becomes aware that a dog is chasing him. The boy runs toward an apple tree, climbs it, watches the dog walk off, and in the last picture, sits eating an apple. Typically children tell a story in which fear of the dog is the motive for climbing the tree. Three cards are removed in which the chasing dog appears, and the child is asked to tell a story to the remaining cards which a person might tell who has never seen all the cards. A non-egocentric story typically includes a motive for climbing the tree as only a yearning for apples. Set 2 showed a girl diving off a board in order to retrieve a balloon from a swimming pool that a nearby boy had lost. With the critical balloon cards removed, the story usually constructed is that of a girl showing a little boy how well she can dive.

Social egocentrism was scored using Flavell's criteria (1968). A score of 4 was given to a correct four-card story which presented a non-fear motive for climbing the tree (Set 1) or non-retrieval motive for diving (Set 2); score 3 is given to stories which do not provide any motive for climbing or diving; score 2 is given to stories that show rather weak inhibition of the seven-card motives, e.g., the boy climbs the tree in fear of something other than a dog; score 1 was given to stories highly similar to the seven-card story using fear-of-dog and retrieval-of-balloon motives. The summed scores ranged from 2 to 8.

Decentration-Alternate Uses (DU). Two tasks were selected which appeared to show some validity of measuring the child's ability to deploy attention. The first, alternate uses, asks the child to name many possible uses for a string and a towel, without time limit or any feedback. A practice item, a chair, was used to insure the child understood the task. The criteria for scoring were that the uses by (1) realistically possible given the object's properties (e.g., the child swinging from a tree on the string was given no points but swinging a doll with the string was scored 1); (2) applicable to that particular object and not most objects (e.g., no points were given for "you can throw it on the ground"); and (3) non-repetitive (e.g., the towel being used to wash hands, face, and feet would be scored once). The number of uses for the towel and string summed ranged between 0 and 19 for this sample.

Decentration-Similarities (DS). Presumably this task also requires that a child focus on a variety of object qualities, but in this case to find similarities among a group of objects. For practice, a blue plastic toothbrush and comb were presented and the child was asked to think of all the ways they were alike, the same, or "go together." After it appeared the child understood the task, two sets of objects were presented one at a time. The first was a safety

pin, needle, scissors and can opener that shared such features as being made of metal, shiney, having sharp points, etc. The second group was made up of a postage stamp, table napkin, small box, and small notebook which were similar in being made of paper, having printing on them, corners, etc. The number of similarities summed for the two sets ranged from 1 to 9.

Intelligence test (PPVT). The Peabody Picture Vocabulary Test provided an estimate of receptive verbal intelligence. Four pictures are presented from which the child points out the one that matches the verbal word given by the examiner, and repeated with increasingly difficult words.

Peer-nominated popularity and leadership. Within each of the ten classrooms from which children were drawn, they were asked to select from among the tested children their "very best friend" and their "next best friend," as a measure of popularity. After checking that the child understood what a "president" or "leader" was, s/he was asked to select from among the tested children in his/her classroom the one that would make the "very best president" and the "next best president" of the class as a measure of leadership. Being cited as "best" was given 2 points, and "next best" as 1 point. The summed scores of nominations, which ranged from 0 to 10 for popularity and 0 to 10 for leadership, were trichotomized within each class. In the low popularity or leadership group were children who were never or seldom cited, medium popularity or leadership as the middle third group occasionally cited, and high popularity or leadership as frequently cited. Five of the 80 children were added late to the sample and, therefore, were not among those judged.

Reliabilities. The interscorer reliabilities for SocE and CE were both .97, DU, r=.96 and DS, .83. Test-retest reliabilities on five tasks were provided by retesting within two weeks 18 children randomly drawn from the two schools. The reliabilities ranged from .61 to .88 for the egocentrism tasks, the SpE task

yielding the lowest reliability; and .55 and .88 for DS and DU, respectively. The test-retest reliabilities may underestimate somewhat the stability of performance over time in that a few children seemed to be uninvolved in the tasks the second time and their intiial performances were lower upon retesting.

Results

The performance on the egocentrism and decentration tasks at each grade level is presented in Table 1, and the distributions of scores for each task at each grade are shown in Appendix A. The variation of performance on the

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Insert Table 1 about here

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tasks as a function of grade level, sex, and SES is presented later in this section under "level of egocentrism and decentration performance."

Intercorrelations among tasks. The convergent validity of egocentrism is assessed by the magnitude of the intercorrelations of the three egocentrism tasks and their relation to decentration, and the discriminant validity assessed by the relations between egocentrism and intelligence. The intercorrelations are shown for the entire sample in Table 2 and at each grade level in Table 3.

Insert Tables 2 and 3 about here

First, for the entire sample the three egocentrism measures were not consistently related: SocE and SpE and SocE and CE correlations were statistically significant and moderate (r=.36 and .32 respectively), but SpE and CE were unrelated (r=.14). These correlations were not substantially due to their covariation to chronological age as shown in Table 4. The correlations among

Insert Table 4 about here

the three egocentrism tasks remain virtually the same when partialled for age. The magnitude of these partialled correlations are quite similar to those found by Rubin (1973) in which, with either MA or CA partialled, the SpE/SocE (recursive thinking) was correlated .36 and SocE/CE correlated .31. The major difference is the SpE/CE relation of .36 found by Rubin was not found here, and this lack of relationship is consistent with the findings of Hollos (1975) and Kurdeck and Rodgon (1975) for this age group.

The decentration tasks used for this study as approximate indices of attention deployment were significantly but only moderately related to each other (r=.30). Therefore, in all following analyses the two measures were not combined. There was no relationship found between decentration and egocentrism tasks except for CE/DU relation of .29. Performance on the decentration tasks was not related to age, and therefore partialling for age (Table 4) changed the relations very little.

Two egocentrism tasks, SpE and CE, and both decentration tasks were unrelated to age, grade, mental age or IQ, but all these variables were significantly related to performance on the SocE task. In the case of IQ then, as measured by receptive verbal intelligence, the discriminant validity of egocentrism is supported for two of the three role-taking measures which is consistent with several other studies (see Shantz, 1975, for a review of these relations).

The intercorrelations of the major variables were examined within grade levels (Table 3) to determine whether the correlational patterns of the entire sample were also descriptive of each grade. As in the total sample, the lack of relation between SpE and CE occured at each grade level. The significant relations between SocE and the other two egocentrism tasks were found in this

analysis to be due to substantial relations between SocE and SpE in Grades 1 and 2 (r= .48 and .53, respectively) but not the upper two grades, and between SocE and CE in Grade 2 (r= .68) and Grade 4 (4= .47). These correlations represent a "partial partialling" of chronological age in that CA varied only within one grade in each case. A notable consistency in the data is the lack of relation of any egocentrism tasks at Grade 3.

The rather frequent negative correlations between egocentrism tasks and chronological age found within grades (Table 3) indicates a slight tendency for younger children to perform better in each grade, probably reflecting that the oldest children in each grade were repeating enrollment in that grade.

The two measures of decentration were not highly related at any grade level, the range being .19 to .36. The significant correlation found for the total sample between DU and CE was found only at the second grade (r= .54). Decentration-uses did not correlate significantly with any other egocentrism measure nor with age, MA, IQ or sex at any grade level. Decentration as measured by the Similarities test did not relate to SpE at any grade, nor CE except at Grade 4 (r= .47). Likewise, DS did not relate to SocE for Grades 1 and 4, but did for Grade 2 (r= .57) and for Grade 3, but negatively (r= -.47). As with decentration-uses, the decentration-similarities measure did not relate significantly to CA, MA, IQ or sex except for fourth-graders. The correlations there indicated that mentally advanced and brighter students found fewer similarities among objects. The number of students at each grade level was 20, and the reliability of these relations may not be high.

Since almost all correlational studies of egocentrism have used middle-class subjects, the two socio-economic groups of this study were examined separately to determine what similarities and differences occured in the patterns of inter-relationships. The lack of relationship between SpE and CE found for

the entire sample was true of both SES groups. The relation between SocE and CE tasks was significant at the lower SES school (r= .48) but not the middle-SES school (r= .21). A significant correlation between SocE and CE found for the total sample (r= .32) occured for the middle-SES group (r= .39) but not the lower-SES group (r= .16). The decentration measures inter-correlated more highly for the low-SES group (r= .37, $p < .05$) than for the middle SES group (r= .22). DS did not correlate with any egocentrism measure for either SES group, whereas DU did.

Specifically, DU has the same significant relationship to CE at both SES levels (r= .31, $p < .05$), and with SocE for the middle SES group (r= .31), but not the low SES group (r= .00). The intercorrelations of age, grade, and mental age with the various tasks were similar for both SES groups, i.e., nonsignificant. Only in the case of SocE were these variables significantly related, and for both SES groups.

Factor analysis. A principal-factor analysis was done to determine the pattern of relationships among the egocentrism and decentration measures for the entire sample. The criterion for factor extraction of eigenvalues of 1.00 or greater resulted in two factors which accounted for 48% of the total variance. Since underlying dimensions could not be assumed to be orthogonal, the principal factors were subjected to an oblique rotation. In Table 5 are the loadings of the tasks on the two factors. The first factor is composed largely of SocE, with

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Insert Table 5 about here

SpE and IQ loading substantially less. Factor 2, on the other hand, is composed primarily of CE, both decentration measures, and age. These factors are largely independent, the correlation between them being .19.

This two-factor structure of egocentrism and decentration measures was obtained in a previous study (Shantz, Note 7). The same tasks, with one exception,

were given to black children in grades 1 through 4 in low-and middle-SES schools. The SocE task differed in that study: a more perceptual egocentrism task was used which asked the child to determine what another person could see that the child could not, or visa versa (Flavell, 1968). Even with this different task, the factor structure that emerged for the entire sample (N=80) was highly similar to the one found in this study. Factor 1 in the previous study was composed of CE, DU, DS, and age with loadings of .74, .67, .64, and .72, respectively. It was, thus, virtually the same as Factor 2 of this study. Factor 2 in the previous study was composed of SpE, the perceptual egocentrism task, and IQ with loadings of .68, .56, and .60, respectively. As such, it is very similar to Factor 1 of this study. These data support the reliability of the factor structure found here. In brief, the verbal communication task (CE) appears to be fairly independent of performance on the SpE and SocE tasks, and somewhat unexpectedly, is the only egocentrism task to load with the decentration measures.

Relations to popularity and leadership. The correlations among various egocentrism tasks and social status indices of popularity and leadership are presented in Table 6. Of the 24 correlations, 20 indicate no relationship between

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Insert Table 6 about here

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egocentrism and social status, consistently so for SocE. Three significant negative correlations occured: children who performed more poorly on the spatial role-taking task were more frequently cited by their peers as a friend or potential leader, in the first grade particularly. This may be due in part to the fact that the majority of children in the first grade failed the spatial task and selected among tested children their "friend" and "leader." Also, CE was negatively related to popularity in the third grade. In short, there was no support for the expected covariation of social status and egocentrism.

Level of egocentrism and decentration performance. The fifth question posed concerning the similarity of role-taking and decentration abilities among children who differed in SES, sex, and grade level. The results of three ANOVAs on egocentrism performance are presented in Table 7.

Insert Table 7 about here

The child's ability to differentiate between the information he possesses and another's lack of information, as measured by the SocE task, showed a significant increase with grade level, and was significantly higher for the middle-SES group (mean= 6.5) than the low-SES group (mean 4.8). The significant SES X Sex interaction indicated that boys' performance did not vary with social class, but girls' did: middle-SES girls performed much better than middle-SES boys, whereas low-SES girls' performance did not differ substantially from low SES boys' performance.

Communication egocentrism did not vary significantly for different sexes or grades, but SES did have a significant impact. Children's ability to give descriptions of the object and placement site to a "blind" listener was significantly better in the middle-SES group (mean= 13.5) than the low-SES group (mean =12.3). In communication tasks fairly similar to this one, Gottman et al (1975) also reported significantly better communication performance by middle SES children. There was a steady increase in performance from Grades 1 to 4 (see Table 3) but the differences between grades were not significant.

Spatial egocentrism varied significantly as a function of grade level, and of combinations of grade level and sex. In the first case, older children, in general, performed better than younger children but there was within this trend particularly poor performance by third graders. Girls performed better than boys in Grades 1 and 2, but boys outperformed girls in Grade 4. Gottman

et al (1975) found on their combined spatial egocentrism tasks that grade level and SES had significant direct effects, the latter not occurring here.

In summary, SES had an impact on egocentrism performance in two cases: lower-SES children performed significantly more poorly than middle-SES children on SocE and CE. Sex differences had no direct effect on egocentrism but interacted with SES on SocE and with grade level for SpE. Increasing grade level was associated with significantly higher performance in SocE and SpE tasks, but only a nonsignificant trend of this type occurred for CE.

In contrast to the egocentrism performance, both decentration tasks showed no significant variation due to SES, grade, or sex differences.

Discussion

The convergent validity of egocentrism was given moderate support by the data. Social egocentrism was significantly, but moderately, related to SpE and CE. A quite consistent lack of relation was found between SpE and CE for the sample as a whole, at each grade level, and for both SES groups. This pattern of interrelationships is consistent in part or whole with some studies (e.g., Hollos 1975; Kurdek & Rodgon 1975; Rubin 1973). Rubin's study (1973), which is most similar to the present one, found that SpE, CE, and recursive-thinking (as a measure of egocentrism) were all intercorrelated when partialled for MA or CA in the .31 to .36 range. Thus, in two of the three relations, Rubin's findings are corroborated. The interpretation of such data as Rubin's and those here is hampered by several problems. First, what magnitude of correlations can one legitimately expect as demonstrating a functional relation? On the one hand, given that the content of egocentrism problems are quite different and that content would have (and typically does have) some demonstrable effect on performance of concrete-operational children, very high intercorrelations would be unlikely. On the other hand, if these tasks all require a fairly

unitary conceptual ability to solve, role-taking, then the magnitude of the correlations across and within grades should be something more than "statistically significant." The correlations among tasks in this study are quite modest for the sample as a whole and within all grades, except second grade.

The second problem has to do with the statistical procedure of partialling age. Partialling is used here to determine whether, apart from some joint dependence of each task on increasing age, there is some functional relationship among the tasks. The dilemma of using partialling of CA has been discussed elsewhere (Wohlwill 1973). What is of more developmental interest is the relation among tasks within grade levels which has the effect of holding CA relatively constant while indicating changes in relations at each at each grade level. The correlation between SocE and SpE was found to be particularly strong in Grades 1 and 2 but not the upper grades; SocE and CE relation, significant for the total sample, occurred only at Grades 2 and 4; and, SpE and CE showed no relation at any grade level. This may mean that the versions of the tasks used in this study are particularly sensitive to performance capabilities of second-graders and/or differences are greatest during this supposed time of transition from a more egocentric orientation. In short, the tasks may be particularly suited to detecting changes in role-taking ability that occur in the earlier grades. At the same time, each grade was not sampled extensively and only further research can determine whether these within-grade correlations are reliable.

The factor analysis gave further evidence that egocentrism is not a highly generalized inability to take another's role. Two factors emerged, the first being defined almost entirely by SocE, and to a much lower degree by SpE and IQ. Although CE contributed to both factors, it loaded more on the second factor which was composed primarily of the decentration performance and age. The primary question is what these factors represent. The first factor, composed largely of SocE, might reflect according to Flavell (1968) the ability to decenter and/or

inhibit one's own, original story construction of the pictures. Decentering, as conceptualized and measured in this study, is not supported as an interpretation since DU and DS did not load with SocE. It seems more likely that the first factor largely represents an ability to inhibit attributing to another one's own understanding and to determine what the other, in fact, would know or think. Both in the SocE and SpE tasks, which loaded on the same factor, the child has "information" or a spatial perspective that is clearly at odds with another person's information or visual experience. The communication task, which loaded on another factor, might be thought, however, to share these same requirements. But a close analysis of the CE task suggests that the child does not have "experiences" or "constructions" that are at such odds to the other person's . Rather, the child can solve this task be merely "sharing" his experience with the other, i.e., tell about the object he is viewing and the site he has selected. In short, the child can perform well on CE by using his self-communications and following instructions to "tell" the other what he is doing. The clear differences between the child and the other person engineered in the SocE and SpE tasks, which seem to require genuine role-taking to solve, may account for their loading on one factor while the CE can be solved primarily by sharing one's own experience. The necessity for role-taking tasks to have a clear difference between the person "judging" and whom s/he is judging has been frequently noted (e.g., Cronbach 1955; Rothenberg 1970). If there is little difference, "sensitivity to others" may be based on nothing more than sensitivity to self (Shantz, 1975).

Are there other aspects which might clarify the meaning of the two factors? Hollos (1975) interpreted her findings (which are consistent with those found in this study) as indicating a "verbal" component and a "concretely presented" component of role-taking. This interpretation appears inadequate. All tasks in this study were concretely presented (whereas one was not in Hollos' study), and

the two which required expressive verbal skills, SocE and CE, loaded on different factors. A second possibility is that the factors represent differences in content of the problem, spatial-visual experience vs. information (such as the child knowing things the other doesn't know). This seems an equally unlikely interpretation since the "information" tasks, SocE and CE, did not load together, but spatial and one information task (SocE) did. It does not seem, then, that specific features of these tasks, such as their content or the types of responses required, provide adequate bases for interpretations of the first factor. Rather, it appears the first factor is based on tasks that create a clear difference between the child and the other person and measure the child's ability to inhibit attributing to the other his own experience.[1]

The second factor, on the other hand, may represent quite different abilities than the first factor. It was composed largely of both decentration measures, CE, and age. There is a common similarity among the tasks which is the need to analyze different object properties: in order to inform a listener for CE, to establish similarities among objects in DS, and to find different uses for objects in DU. All tasks also required simple expressive verbal skills. It was the presumed need to attend to different qualities of objects that initially led to selecting DU and DS as decentration measures. At the same time, the correlation among DU, DS and CE were quite variable which suggests that their shared attentional and analytic features could account only partially for performance.

In relation to the issue of convergent validity, finally, it is worth noting that all three egocentrism tasks in this study, as well as most other egocentrism studies, are measures of "ability." That is, each task implicitly conceptualizes egocentrism as a continuous, underlying dimension that varies in degree. Thus a child who correctly solves three spatial positions receives three times the credit

of a child who only solves one. There is another way, however, in which egocentrism has been conceptualized. That is, egocentrism is conceived as different types of relations of self/other that the child constructs through ontogeny, and the types of reasoning underlying these relations. As such, egocentrism is viewed as a more discontinous phenomenon, having qualitatively different forms (e.g., Selman & Byrne, 1974). It would be helpful in future research on the convergent validity of egocentrism to supplement studies of role-taking ability with studies of the generality of different types of role-taking.

The second question of this study dealt with the theoretical relation between decentration and egocentrism. This was discussed in part earlier. First, however, it should be noted that the two decentration tasks showed a modest relationship for the sample as a whole, perhaps reflecting the divergent aspect of DU and the convergent aspect of DS. To the extent they can be presumed to be assessing some aspects of attention deployment, it is clear that role-taking abilities and decentration should not be used as synonymous terms. Relations between role-taking and decentration tasks were, for the most part, very low. It might well be that decentration and role-taking tasks would show low-level relationships in that decentration, according to Piaget's view (1950), is a necessary but not sufficient factor in role-taking. Thus a child might well deploy his attention from his own experience and situation and attend to the other's situation, but have difficulty in constructing what the other would know, think, feel, or see. It would be worthwhile to find other tasks as well as the present ones to more adequately measure decentration abilities beyond this first exploratory effort.

The third question concerned the discriminant validity of egocentrism, specifically whether performance on such tasks could be largely a function of

IQ. The large majority of intercorrelations indicate no significant relation of intelligence with role-taking ability, but with the one consistent exception of SocE. Even in that case, as well as the factor analysis, IQ has only a modest relationship. As such, the data of this study are consistent with most other research indicating no relation between IQ and egocentrism measures, or, at most, only relations in the .20 to .40 range (Shantz, 1975).

Is egocentrism related to social behavioral indices such as peer popularity and leadership? At most grade levels, there was no relation found between performance on egocentrism and peer-nominations on either variable. Several significant correlations were found, however, that were opposite to the prediction. This occurred especially in the case of SpE where children low in spatial perspective-taking were more often cited as friends or potential leaders, and especially in the first grade where most children failed SpE task. It was more probable, then, that cited children from the tested sample would be among those failing the task. Gottman et al (1975) found most measures of "social skill" (labeling emotions, spatial perspectives, and left-right tasks) did not relate to popularity although communicative egocentrism did. Popularity is probably too global a social index and has multiple determinants (e.g., physical attractiveness, social knowledge, etc.) to relate in a strong, consistent manner with role-taking skills. Different measures of popularity and their relation to role-taking skills found in other studies (see Shantz, 1975, for a review) support the notion that role-taking may be more related to general positive peer interactions than popularity per se (Gottman et al, 1975).

Finally, are there subgroups of children who show poorly developed role-taking skills? For social and communicative role-taking, lower-SES children evidenced significantly poorer skills than middle-SES children, and on the whole, older children performed better than younger children. However, significant

interaction of SES and sex indicated that low-SES girls evidenced the lowest social role-taking skills while middle-SES girls performed the best, and boys of both SES groups showed little difference in performance. On the spatial task, girls showed advanced ability over boys in the first two grades, but that difference was reversed at Grade 4. In contrast to egocentrism performance, decentration ability did not vary significantly for different SES groups, grades, or sexes.

The interpretation of the two components of performance on the egocentrism and decentration tasks suggest that a critical factor in measuring egocentric functioning in future studies is the degree to which tasks provide a clear difference between the child and the person with whom s/he is interacting or judging. A "clear difference" in information, perspectives, or goals, for example, help to insure that correct responses are not based on projection or attribution of the self's information, on general social normative information, or shared social expectancies. This issue has already arisen in the area of empathy research (Borke 1971; Chandler & Greenspan 1972). If tasks do not provide such a difference between the child and the other person, the generality of egocentrism may well be underestimated. Secondly, it would be helpful to examine the issue of convergent validity from a more qualitative, structural approach to role-taking, as that suggested by Selman & Byrne (1974), in contrast to the more quantitative, "ability" conception of role-taking used here. That is, what consistency in performance occurs in different types of role-taking problems of children within a particular stage of role-taking development? Such information would be valuable in clarifying the generality of egocentric functioning.

Footnotes

This research was supported by Grant HD-07369 from the National Institute of Child Health and Human Development. A portion of this study was reported at the Society for Research in Child Development meeting in Denver, 1975. I wish to thank the administrators, teachers, and children of Pepper Elementary School of Oak Park, Michigan, and Dickinson Elementary School of Hamtramack, Michigan, for their generous help. In addition, Ms. Barbara Steinlauf's assistance in all phases of this study is gratefully acknowledged. Requests for reprints should be sent to Carolyn Shantz, Department of Psychology, Wayne State University, Detroit, Michigan 48202.

[1]There may be differences in the rules or logic required by the different tasks that account for the factor structure. For example, Flavell, Omanson, and Latham (Note 4) suggest the spatial task is solved by acquiring such rules as "one position means one and only one perspective" and different position means different perspective." Applied to the social role-taking tasks, such rules might be "one set of pictures means one story" and "a different set of pictures means a different story." Such rules do not seem readily applicable to the CE task and may account for that task not loading with SpE and SocE.

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Table 1

Means and Standard Deviations of Correct Performance by Grade

Tasks	Statistic	Grades			
		1	2	3	4
SocE	M	4.1	5.7	5.5	7.0
	SD	2.0	2.0	2.0	1.7
CE	M	11.9	12.9	13.0	13.8
	SD	3.1	3.0	3.1	2.8
SpE	M	1.3	1.7	1.2	1.6
	SD	0.5	0.5	0.4	0.5
DU	M	6.1	7.4	9.7	8.1
	SD	2.9	2.5	4.6	3.8
DS	M	4.9	5.0	5.9	5.3
	SD	2.1	1.3	1.4	1.1

Table 2

Intercorrelations of Tasks (N=80)

	CE	SocE	DS	DU	Age	Grade	M.A.	I.Q.	Sex
SpE	.14	.36**	.02	.04	-.07	-.09	-.03	.08	-.09
CE		.32**	.19	.29**	.19	.23*	.12	.05	-.13
SocE			.00	.12	.32**	.45**	.45**	.31**	.00
DS				.30**	.15	.15	.00	-.08	.15
DU					.19	.25*	.18	.11	.02
Age						.89**	.57**	-.09	-.11
Grade							.66**	.13	-.02
M.A.								.74**	.22*
I.Q.									.36**

*p $<$ .05, r= .22

**p $<$ .01, r= .29

Table 3

Intercorrelations of Tasks by Grade Level (N=20 per grade)

Tasks	Grade	CE	SocE	DU	DS	Age	M.A.	I.Q.	Sex
SpE	1	.25	.48*	.01	.01	-.13	-.24	-.14	-.63**
	2	.32	.53*	.34	.43	-.09	.03	.15	-.13
	3	-.28	-.06	.07	.09	-.40	.16	.27	.15
	4	.23	.22	.08	.18	-.17	-.22	-.10	.42
CE	1		.00	.39	.14	-.06	.03	.10	.24
	2		.68**	.54*	.37	-.05	.19	.14	-.01
	3		-.06	.13	-.12	.20	.10	.03	-.25
	4		.47*	.16	.47*	-.15	-.39	-.21	.02
SocE	1			.02	-.25	-.14	-.15	.13	-.27
	2			.40	.57**	-.18	.30	.32	.07
	3			-.28	-.47*	-.12	.56**	.60**	.27
	4			.21	.24	-.36	.20	.42	.03
DU	1				.19	-.09	-.13	.01	-.22
	2				.36	-.05	.19	.17	-.08
	3				.31	-.13	.11	.31	.06
	4				.21	.03	-.12	.21	.16
DS	1					.24	-.03	-.13	.20
	2					-.26	.27	.32	.15
	3					.06	-.29	-.22	.13
	4					-.24	-.54*	-.47*	.09

*p< 05=.44

**p< 01=.56

Table 4

Intercorrelations with C.A. Partialled (N=80)

Tasks	CE	SocE	DU	DS
SpE	.17	.38**	.06	.04
CE		.29**	.24*	.13
SocE			.07	-.05
DU				.25*

*p $<$ .05, r= .22

**p $<$ .01, r= .29

Table 5

Factor Pattern (Principal-Factors Analysis with Oblique Rotation) and Loadings for Each Task (N=80)

Tasks and Variables	Factor 1	Factor 2
SpE	.34	.04
SocE	.96	.13
CE	.20	.44
DU	-.03	.58
DS	-.18	.54
I.Q.	.30	-.05
Age	.15	.33

Table 6

Contingency Coefficients for Social Indices and Egocentrism

	Popularity				Leadership			
	Grades				Grades			
Tasks	1	2	3	4	1	2	3	4
SpE	-.49**	-.36	.47*	-.04	-.49**	-.15	.12	.00
CE	-.14	.09	-.47*	.30	-.03	.00	-.37	.14
SocE	.05	-.07	.00	.11	.02	.00	.08	.00
N	20	18	19	18	20	18	19	18

*Kendall tau C, $p < .05$

**Kendall tau C, $p < .01$

Table 7

Analyses of Variance Summaries on Each Egocentrism Task

		Social Role-taking		Communication Role-taking		Spatial Role-taking	
Variables	df	F value	p	F	p	F	p
SES	1,64	18.05	.01	4.40	.05	1.46	--
Sex	1,64	0.43	--	2.26	--	0.91	--
Grade	3,64	8.17	.01	1.08	--	6.50	.01
SES X Sex	1,64	5.42	.05	1.05	--	0.01	--
SES X Grade	3,64	1.11	--	0.42	--	0.91	--
Sex X Grade	3,64	0.80	--	0.39	--	4.03	.05
SES X Sex X Grade	3,64	0.40	--	0.16	--	2.07	--

$p < .05$, df=1, 64=4.00
$p < .01$, df=1, 64=7.08
$p < .05$, df=3, 64=2.76
$p < .01$, df=3, 64=4.13

Appendix A

Percentage of Scores for Egocentrism and Decentration Tasks for Each Grade Level

		Grades			
SocE	Scores	1	2	3	4
	2	30	0	0	0
	3	10	15	25	5
	4	25	20	10	15
	5	15	15	15	0
	6	5	5	10	0
	7	5	20	20	20
	8	10	25	20	60
	Mean	4.1	5.7	5.5	6.95
	Mdn	3.9	5.5	5.5	7.5
CE	8	25	10	15	10
	9	10	10	5	5
	10	5	10	10	0
	11	0	5	5	0
	12	10	10	5	15
	13	20	0	0	10
	14	5	5	20	0
	15	5	30	10	20
	16	20	20	25	40
	17	0	0	5	0
	Mean	11.9	12.85	12.95	13.75
	Mdn	12.5	14.5	13.75	14.75
SpE					
	1	70	35	85	40
	2	30	65	15	60
	Mean	1.30	1.65	1.15	1.6

Appendix A, continued

		Grades			
DU	Scores	1	2	3	4
	0	5	0	0	0
	1	0	0	0	0
	2	5	0	5	0
	3	0	0	0	0
	4	25	10	5	15
	5	0	15	5	10
	6	25	20	15	20
	7	10	15	10	5
	8	15	15	5	20
	9	5	5	5	5
	10	0	0	10	5
	11	5	10	0	5
	12	5	10	25	0
	13	0	0	0	0
	14	0	0	0	0
	15	0	0	0	5
	16	0	0	0	10
	17	0	0	5	0
	18	0	0	5	0
	19	0	0	5	0
	Mean	6.1	7.35	9.70	8.1
	Mdn	5.9	6.83	9.50	7.5
DS	1	5	0	0	0
	2	10	5	0	0
	3	10	5	0	5
	4	10	25	25	15
	5	35	30	10	40
	6	10	20	35	25
	7	5	15	20	15
	8	10	0	5	0
	9	5	0	5	0
	Mean	4.9	5.0	5.85	5.3
	Mdn	4.9	5.0	5.93	5.25